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February 15, 2000

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FEDERAL COMMUNICATIONS COMMISSION  
OFFICE OF THE SECRETARY

**HAND-DELIVERED**

Ms. Magalie Roman Salas  
Secretary  
Federal Communications Commission  
445 12<sup>th</sup> Street, S.W.  
Washington, D.C. 20554

EX PARTE OR LATE FILED

Re: ET Docket No. 99-231, Amendment of Part 15  
of the Commission's Rules Regarding Spread  
Spectrum Devices – Ex Parte Filing

Dear Madam Secretary:

The Eastman Kodak Company ("Kodak") filed initial comments in this proceeding on September 8, 1999, in which Kodak proposed that the Commission harmonize its regulations governing operation in the 2.4 GHz band with counterpart regulations that are in force elsewhere in the world.

Enclosed is a "Supplemental Statement" in which Kodak reiterates that proposal. Accompanying the Statement is a summary of the relevant provisions of the European Standard ETS 300 328, together with a comparison chart showing the values in Sections 15.427 and 15.429 of the Commission's rules, compared to their counterpart values in ETS 300 328.

Kodak respectfully requests that the Commission issue a Public Notice seeking comment specifically on Kodak's proposal as set forth in the enclosed "Supplemental Statement."

Respectfully submitted,



Thomas J. Keller

Enclosures

01-2

In re: Amendment of Part 15 of the FCC's Rules Regarding Spread Spectrum Devices, ET Docket No. 99-231

**SUPPLEMENTAL STATEMENT OF  
EASTMAN KODAK COMPANY**

**(Including Summary and Comparison of ETS Standard 300-328)**

**Author:** Grant Carlson, Ph.D., Eastman Kodak Company

**Date:** February 15, 2000

The Eastman Kodak Company ("Kodak") recognizes the growing need for the global transmission of data by means of low cost RF wireless systems. Kodak, like many other companies, is exploring new ways to transmit information at high data rates for worldwide consumer video and imaging applications. These consumer applications often require data rates of 10 to even 20 Mbps. Kodak has spent considerable resources in the past several years analyzing worldwide regulations for operation in the 2.4 to 2.5 GHz band because that is the only band universally available around the world for unlicensed operation. In our analysis, we have found that the HomeRF proposal only further complicates the global issues concerning this band.

We note that the Reply Comments of the Committee for Unlicensed Broadband Enablement ("CUBE") of November 19, 1999, encouraged the Commission to enable manufacturers to build low cost, high speed wireless products that can be used to enable broad bandwidth transmission in homes around the world. Kodak agrees with CUBE that it is time for the FCC to move to global harmonization. However, the Home RF proposal is not the way to do it. In this regard, Kodak specifically disagrees with CUBE's suggestion that the HomeRF frequency hopping approach is "authorized under ETSI rules...." See CUBE Reply Comments at 45.

The HomeRF proposal for wideband frequency hopping systems using 5 MHz wide channels does **not** meet the frequency hopping requirements of subclause 5.1.1 of ETS 300-328, which specifically mandates **non-overlapping** channels. The Home RF system would, however, meet the requirements of subclause 5.1.2 of ETS 300-328, and would be permitted to transmit with a peak output power density of 10 dBm/MHz, which is statistically very similar to the allotted power requirements of Section 15.249 of the Commission's rules.

Kodak agrees with the technical analysis accompanying the Wireless Ethernet Compatibility Alliance ("WECA") Response of January 18, 2000, which states that the use

of overlapping channels with peak power levels of 23 dBm, as proposed by HomeRF, will create a significant increase in interference to users of the band. The European Standard ETS 300-328 clearly describes frequency hopping systems with 20 or more **non-overlapping** hopping channels with resulting 20 dB bandwidths of 4 MHz and less. Bandwidths greater than 4MHz are considered as not effective at spreading the power and are given output power levels limited by the power spectral density of 10 dBm/MHz. The European Standard ETS 300-328 does allow for 20 dBm of peak output power EIRP when the frequency hopping system has 20 or more non-overlapping hopping channels.

It is Kodak's position that the only FCC rule change necessary for harmonization is to incorporate by reference in the Commission's Part 15 regulations the European Standard, ETS 300 328, as a permitted alternative. This would allow for 20 dBm, **non-overlapping** wideband frequency hopping systems that can deliver high data rates at reasonable costs, yet will not create significant increased interference in the 2.4 GHz band. The benefits of allowing manufacturers to follow a single global standard would enable new generations of inexpensive, multimedia consumer products that would be small, portable and capable of operating not only in the user's home market but also seamlessly across international borders. Another major benefit from harmonization would be lower product costs because of reduced physical complexity and lower costs (and fewer delays) associated with regulatory compliance and testing.

In conclusion, Kodak respectfully recommends that the Commission adopt the European Standard ETS 300 328 in its entirety as an additional, alternative set of rules for wireless systems operating in the 2.4 GHz band. There is ample precedent for this approach. The FCC has previously adopted the European Standard, EN55022, for Part 15 unintentional radiators (EMC), as an alternate set of rules. See Section 15.109(g) of the Commission's rules. The FCC should, in like fashion, adopt ETS 300-328 by incorporating it by reference as an alternative standard to be used in Part 15 with regard to operations in the 2400-2483.5 MHz band.

#### **SUMMARY OF ETS 300-328**

The full text of ETS 300 328 is available for downloading at the website of the European Telecommunications Standards Institute ("ETSI"). A brief summary of the relevant provisions of ETS 300 328 is set forth below, followed by a comparison chart showing the values in Sections 15.249 and 15.247 of the Commission's rules, together with counterpart values in ETS 300 328.

ETS 300 -328 defines FHSS and DSSS and other forms of modulation in the band 2.4 GHz to 2.4835GHz with 100mW (20 dBm) peak eirp output power for

compliant FHSS systems and an output power density of 10 dBm/MHz peak eirp for DSSS and other forms. FHSS systems must have 20 or more non-overlapping channels.

ETS 300-328 has spurious emissions limits at the band edges within 1.5 dB of FCC peak requirements as defined in Section 15.35. Average limits are not defined or used.

ETS 300 -328 uses conducted measurements and test setups similar to FCC Part 15, Section 15.247. Field strength measurements are used only for compliance to out of band emissions levels.

Attachment: "World Wide Standards Comparison Chart"

<b>Parameter</b>	<b>FCC 15.249</b>	<b>FCC 15.247</b>	<b>ETS 300 328</b>
	US	US	Europe
<b>Frequency Range</b>	2400-2483.5 MHz	2400-2483.5 MHz	2400-2483.5 MHz
<b>Minimum Bandwidth or</b>	N/A	500kHz @ 6dB	250 kbps
<b>Output Power</b>	114 dBuV/m Peak and 94dBuV/m Average@ 3m in 1MHz (Radiated)	1 Watt Peak	100 mW Peak e.i.r.p.
<b>Equivalent to</b>	-1.25 dBm Average in 1 MHz	30 dBm Peak	20 dBm Peak e.i.r.p.
<b>Output Power Density</b>	N/A	8 dBm/3kHz Peak	10 dBm/MHz Peak e.i.r.p.
<b>Spurious Emissions at Lower Band Edge 2400 MHz</b>	74 dBuV/m Peak and 54dBuV/m Average@ 3m in 1MHz	20 dB below Peak Power	-80 dBm/Hz Peak e.i.r.p.
<b>Equivalent to</b>	-21.3 dBm Peak and -41.3 dBm Average in 1MHz	10 dBm Peak	-20 dBm Peak e.i.r.p. in 1MHz
<b>Notes:</b>		Falling to 54dBuV/m @ 3m Average in 1MHz @ 2390 MHz	
<b>Spurious Emissions at Upper Band Edge 2483.5 MHz</b>	74dBuV/m Peak 54dBuV/m @ 3m Average in 1MHz	54dBuV/m @ 3m Average in 1MHz	-80 dBm/Hz Peak e.i.r.p. Conducted
<b>Equivalent to</b>	-21.3 dBm Peak and -41.3 dBm Average in 1MHz	-21.3 dBm Peak and -41.3 dBm Average in 1MHz	-20 dBm Peak e.i.r.p. in 1MHz